Trend Study 14-14-99

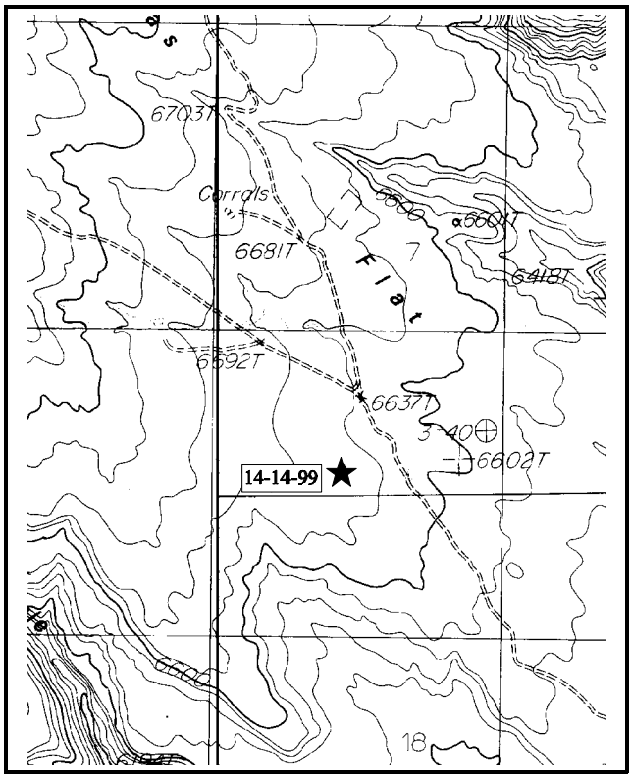
Study site name: Texas Flat . Range type: Big Sagebrush-Grass .

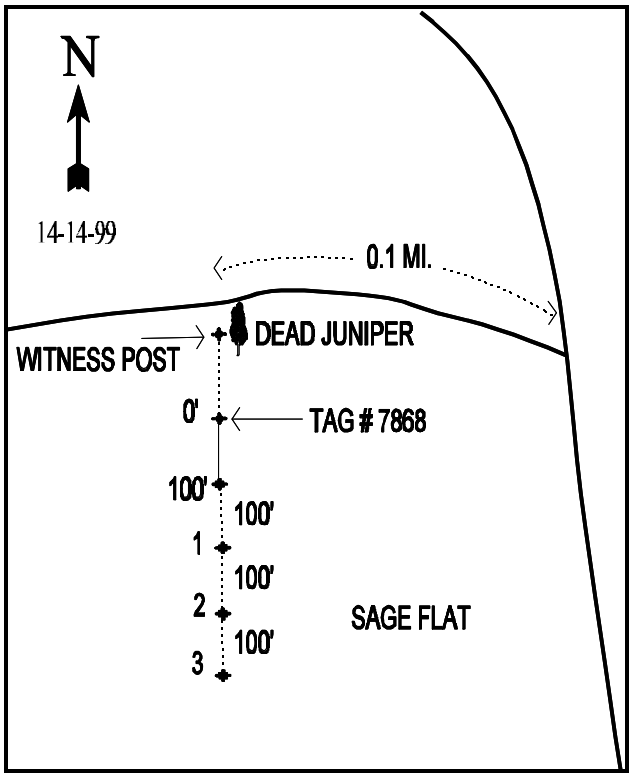
Compass bearing: frequency baseline 164°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11 & 71ft), line 2 (34ft), line 3 (59ft), line 4 (95ft).

LOCATION DESCRIPTION

Turn north off of Highway U-95 onto San Juan County Road #263 at a point 0.3 miles east of mile marker 102. Proceed north 1.1 miles to a fork. Take the left fork. Go another 3.6 miles and turn left. Go down this road 0.2 miles. Turn left onto a faint two-track road and go 0.1 miles to a witness post located just west of an old dead juniper. The witness post is a 3 1/2 foot tall green fence post on the south (left) side of the road. The 0-foot baseline stake is 100 feet south and is a fence post tagged #7868.





Map Name: Hotel Rock Diagrammatic Sketch

Township 37S , Range 20E , Section 7 UTM 4159914.905 N, 609095.293 E

DISCUSSION

Trend Study No. 14-14 (36-2)

Texas Flat is a large flat south of Elk Ridge surrounded by deep slickrock canyons. Dense juniper-pinyon stands are intermixed with large sagebrush parks. The area is managed by the BLM. In 1955, the sagebrush was railed and drill-seeded with crested wheatgrass. In October 1986, the area was treated with the herbicide tebuthiuron, a soil activated herbicide that defoliates and eventually kills broad leafed plants. Sagebrush survival on the study site depends on treatment boundaries and application rates. The area is grazed by 300 cattle in the fall or spring. They had heavily utilized the available crested wheatgrass in 1986. Deer use is light on the site judging by pellet groups and sagebrush utilization. The Texas Flat pellet group trend transect showed an average of 9 deer days use/acre (22 ddu/ha) from 1982 to 1986 (Jense et al. 1986). The average deer days use/acre declined to 7 (18 ddu/ha) between 1987 to 1992 (Jense et al. 1992). Average deer days use/acre increased to 13 (33 ddu/ha) between 1993 and 1997 (1998 DWR). Pellet group data from the site in 1999 estimate 19 deer days use/acre (47 ddu/ha) and 46 cow days use/acre (114 cdu/ha). All of the cattle pats appeared to be from last season.

Soil on the site has a sandy loam texture. The soil on the site should be moderately deep, but it was very compacted which made soil pentrometer measurements difficult. Effective rooting depth was estimated at only about 8 inches. This is obviously an underestimation considering that basin big sagebrush, a species which only occurs on deep soils, is present on the site. Parent material is sandstone. There is no rock on the surface or within the profile. Due to the sandy nature of the soil, average soil temperature is high at about 71°F at a depth of 12 inches. Erosion is not a problem due to the high infiltration capacity of the soil and the lack of significant slope.

The herbicide treatment was planned to leave edges and drainages for wildlife. The study site is close to the pinyon-Juniper border, so it is unknown at this point how much herbicide was actually applied. Since the Basin big sagebrush present is not a preferred variety and not fully utilized, the treatment will provide more spring forage as long as the grass is not over grazed by livestock. With the elimination of sagebrush in surrounding areas, the remaining sagebrush along the edges could receive more use. Tebuthiuron also kills forbs, so the few forbs in the community will be temporarily eliminated.

Pretreatment density of basin big sagebrush was estimated at 5,466 plants/acre in 1986. Young plants were abundant, accounting for 83% of the population. Seedlings were also abundant with a biotic potential of 36%. Utilization was light in 1986, vigor normal and percent decadence low at only 4%. In 1992, after the treatment, density of sagebrush dropped to only 180 plants/acre, 78% of which were classified as mature. Density rose in 1994 to 500 plants/acre and remained at that level in 1999. The surviving mature plants are large and vigorous with excellent leader growth and seed production. Most of the decadent sagebrush appear to have partial crown death due to the treatment. Use is light, vigor generally good, and percent decadence is low at 12%. Recruitment has been poor since 1986 with few seedlings and young sampled since then.

Other browse species sampled include stickyleaf low rabbitbrush, slenderbush eriogonum, and broom snakeweed. Slenderbush eriogonum occurs in low densities and receives moderate to heavy use. Broom snakeweed, an increaser subshrub, is common with a stable density of around 2,500 plants/acre.

Grass species present in 1986, prior to the treatment, were mainly crested wheatgrass, some sand dropseed, and needle-and-thread grass. Use was very heavy in 1986 on the available grasses, but vigor was still good and the plants appeared to be recovering from the early spring use. After the treatment, nested frequency of crested wheatgrass remained similar in 1992, then increased in 1994 and 1999. Nested frequency of sand dropseed increased significantly in 1992, but declined significantly in 1999. Currently (‘99) crested wheatgrass accounts for 89% of the grass cover with sand dropseed contributing 10%.

Forbs were scarce before the treatment, however they increased dramatically by 1992. Common species included, low fleabane, thickleaf peavine, prickly lettuce, and scarlet globemallow. Sum of nested frequency of perennial forbs declined dramatically by 1994 and have remained at a low level since. The only common perennial forb encountered in 1999 include, timber poison vetch, thickleaf peavine heath aster, and scarlet globemallow. The annual forb, wooly plantain is also very abundant, especially in the interspaces between grass plants. It currently ('99) accounts for 55% of the forb cover. Other annual and perennial forbs are uncommon.

1986 APPARENT TREND ASSESSMENT

It will be interesting to follow the effects of the treatment on this area. Not knowing the exact treatment of the study site, it is impossible to assign a trend to this disturbed area. Even if not directly impacted by the herbicide, the site will be effected. An increase in spring forage would be beneficial to the deer that winter here, as long as browse forage and cover is left by the treatment. The soil trend will probably remain stable.

1992 TREND ASSESSMENT

Soil trend appears to be stable after the herbicide treatment and great increases in grass and forb frequencies. The browse trend for the key species would be down because the sagebrush population has decreased by 97%, down to only 180 plants/acre. It should also be noted that snakeweed has increased numbers to 3,080 plants/acre, a 20% increase. Pricklypear cactus has noted a 88% decrease in it's population since 1986. The herbaceous understory has seen great changes in the nested frequencies for grasses, especially the forbs. Trend for herbaceous understory is up.

TREND ASSESSMENT
soil - stable
browse - down for sagebrush
herbaceous understory - up

1994 TREND ASSESSMENT

Trend for soil is up slightly. Total vegetative cover declined from 53% to 34%, but litter cover increased and percent cover of bare ground declined from 30% to 22%. Trend for browse is also up slightly. Density has increased from 180 to 500 plants/acre. Use is light and percent decadence low at 8%. Recruitment is poor with low numbers of seedlings and young. Another positive aspect of the browse trend is a decline in the density of broom snakeweed from 3,080 to 2,340 plants/acre. Trend for the herbaceous understory is mixed. Sum of nested frequency of perennial grasses has increased slightly, while frequency of perennial forbs has declined dramatically. Combined sum of nested frequency of perennial grasses and forbs has declined from 1,194 to 665. Perennial forb cover declined from 28% in 1992 to less than 2% in 1994. Some of this decline is expected after a flush of growth following treatment. With this in mind, trend for the herbaceous understory is considered down, but this decline is expected after a flush of growth following the treatment.

TREND ASSESSMENT
soil - up slightly
browse - up slightly
herbaceous understory - down due to a major decline in frequency of forbs

1999 TEND ASSESSMENT

Trend for soil is stable. Percent cover of vegetation has increased, but this is off set by a decline in percent cover of litter and a slight increase in bare ground. Trend for browse is stable due to a stable population density, light use, good vigor, and low percent decadence for basin big sagebrush. Broom snakeweed has also

remained stable. Trend for the herbaceous understory is stable with similar sum of nested frequency values for perennial grasses and forbs compared to 1994. The dominant grass, crested wheatgrass, increased slightly in nested frequency and provides 89% of the grass cover.

TREND ASSESSMENT
soil - stable
browse - stable but still at low densities after treatment
herbaceous understory - stable

HERBACEOUS TRENDS --
Herd unit 14 , Study no: 14

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %		
		'86	'92	'94	'99	'86	'92	'94	'99	'92	'94	'99
G	Agropyron cristatum	ab252	a235	bc280	c306	92	81	95	97	15.33	17.76	15.43
G	Bromus tectorum (a)	-	-	-	2	-	-	-	1	-	-	.00
G	Sporobolus cryptandrus	a30	c241	c206	b124	15	86	73	47	17.44	4.88	1.80
G	Stipa comata	b29	a2	a4	ab11	12	2	3	5	.03	.06	.08
G	Vulpia octoflora (a)	-	-	4	3	-	-	2	1	-	.01	.00
Total for Annual Grasses		0	0	4	5	0	0	2	2	0	0.00	0.00
Total for Perennial Grasses		311	478	490	441	119	169	171	149	32.81	22.71	17.31
Total for Grasses		311	478	494	446	119	169	173	151	32.81	22.72	17.32
F	Artemisia dracunculus	-	-	-	6	-	-	-	2	-	-	.30
F	Astragalus convallarius	9	20	14	31	6	12	9	14	.46	.07	.83
F	Astragalus spp.	b13	a-	a-	b6	7	-	-	3	-	-	.06
F	Calochortus nuttallii	-	1	-	-	-	1	-	-	.00	-	-
F	Castilleja spp.	a-	a-	b24	a-	-	-	12	-	-	.06	-
F	Chenopodium spp. (a)	-	b17	a-	a-	-	10	-	-	.65	-	-
F	Conyza canadensis (a)	-	b10	a-	a-	-	4	-	-	.02	-	-
F	Cordylanthus wrightii (a)	-	b10	a-	a-	-	4	-	-	.52	-	-
F	Descurainia pinnata (a)	-	-	-	4	-	-	-	2	-	-	.01
F	Epilobium spp.	a-	b13	a-	a-	-	5	-	-	.15	-	-
F	Eriogonum cernuum (a)	-	3	-	-	-	1	-	-	.03	-	-
F	Erigeron pumilus	ab18	b25	b27	a3	8	10	13	2	1.72	.52	.01
F	Euphorbia glyptosperma (a)	-	b19	a-	a-	-	8	-	-	.04	-	-
F	Gayophytum ramosissimum (a)	-	-	3	-	-	-	1	-	-	.03	-
F	Lathyrus lanszwertii	a2	b38	bc45	c70	2	20	21	29	1.43	.77	1.85
F	Lappula occidentalis (a)	-	-	-	3	-	-	-	1	-	-	.00
F	Lactuca serriola	a-	c164	b8	ab3	-	69	4	1	5.43	.02	.00
F	Leucelene ericoides	a-	a2	a-	b20	-	1	-	8	.00	-	1.35
F	Machaeranthera canescens	a-	b262	a-	a3	-	88	-	2	15.27	-	.01
F	Penstemon comarrhenus	5	12	8	6	2	5	6	4	.12	.03	.07

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %		
		'86	'92	'94	'99	'86	'92	'94	'99	'92	'94	'99
F	Phlox longifolia	6	4	4	4	2	3	2	1	.01	.01	.15
F	Plantago patagonica (a)	-	$_{a}$92	$_{a}$112	$_{b}$209	-	37	38	65	2.24	.64	6.81
F	Polygonum spp.	-	$_{B}$19	$_{a}$-	$_{a}$-	-	9	-	-	.69	-	-
F	Portulaca oleracea	$_{a}$-	$_{b}$99	$_{a}$-	$_{a}$-	-	43	-	-	1.46	-	-
F	Salsola pestifer (a)	-	$_{b}$45	$_{a}$-	$_{a}$-	-	18	-	-	.87	-	-
F	Senecio multilobatus	1	-	-	-	1	-	-	-	-	-	-
F	Sphaeralcea coccinea	55	40	38	54	26	17	20	24	1.36	.27	.88
F	Streptanthus cordatus	-	-	1	-	-	-	1	-	-	.03	-
F	Tragopogon dubius	$_{a}$-	$_{b}$17	$_{b}$6	$_{ab}$4	-	7	5	2	.25	.02	.01
F	Unknown forb-annual (a)	-	8	-	-	-	3	-	-	.18	-	-
F	Zigadenus paniculatus	-	-	-	3	-	-	-	1	-	-	.00
Total for Annual Forbs		0	204	115	216	0	85	39	68	4.56	0.66	6.82
Total for Perennial Forbs		109	716	175	213	54	290	93	93	28.40	1.83	5.55
Total for Forbs		109	920	290	429	54	375	132	161	32.97	2.50	12.38

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 14 , Study no: 14

Type	Species	Strip Frequency			Average Cover %		
		'92	'94	'99	'92	'94	'99
B	Amelanchier utahensis	0	0	1	-	-	.53
B	Artemisia tridentata tridentata	7	15	17	.22	2.38	.48
B	Chrysothamnus nauseosus albicaulis	0	0	0	-	.00	-
B	Chrysothamnus viscidiflorus viscidiflorus	6	0	6	.15	-	.38
B	Eriogonum microthecum	6	0	5	.18	-	.03
B	Gutierrezia sarothrae	51	42	28	2.94	1.25	.46
B	Juniperus osteosperma	1	0	1	2.83	-	2.20
B	Opuntia fragilis	8	9	25	.42	.05	.46
B	Pinus edulis	-	-	-	-	.00	-
B	Sclerocactus	16	3	0	-	.03	-
B	Yucca spp.	0	0	0	-	-	-
Total for Browse		95	69	83	6.76	3.73	4.55

CANOPY COVER --
Herd unit 14 , Study no: 14

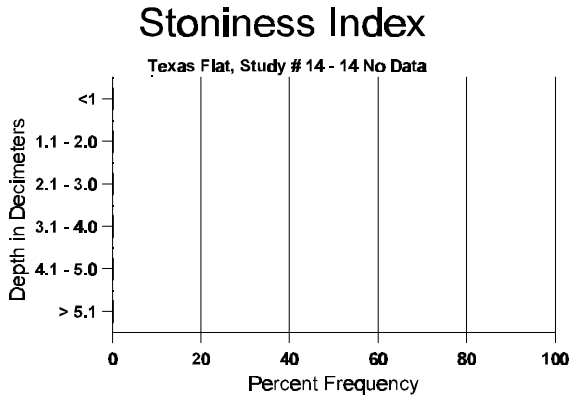
Species	Percent Cover '99
Juniperus osteosperma	4

BASIC COVER --
Herd unit 14 , Study no: 14

Cover Type	Nested Frequency '92	'94	'99	Average Cover % '86	'92	'94	'99
Vegetation	361	351	352	1.25	52.89	33.92	37.51
Rock	-	4	-	0	0	.03	0
Pavement	-	7	-	0	0	.39	0
Litter	289	400	371	58.75	29.62	51.50	44.35
Cryptogams	19	9	39	0	1.19	.12	.68
Bare Ground	251	313	273	40.00	29.62	22.07	24.50

SOIL ANALYSIS DATA --
Herd Unit 14, Study # 14, Study Name: Texas Flat

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
7.9	70.6 (5.5)	6.9	76.9	8.6	14.6	1.6	12.7	89.6	0.4



PELLET GROUP FREQUENCY --
Herd unit 14 , Study no: 14

Type	Quadrat Frequency '92	'94	'99
Rabbit	11	34	48
Deer	7	14	8
Cattle	6	1	19

Pellet Transect Days Use/Acre (ha) '99
N/A
19 (47)
46 (114)

BROWSE CHARACTERISTICS --
Herd unit 14 , Study no: 14

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	123	102	0
	99	-	-	-	-	-	-	-	1	-	1	-	-	-	20	129	150	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'86	00%	00%	00%
'92	00%	00%	00%
'94	00%	00%	00%
'99	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'92	0		-
	'94	0		-
	'99	20		-

Artemisia tridentata tridentata																		
S	86	47	-	-	-	-	-	-	-	-	41	6	-	-	3133			47
	92	19	-	-	-	-	-	-	-	-	19	-	-	-	380			19
	94	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	99	2	-	-	2	-	-	-	-	-	4	-	-	-	80			4
Y	86	68	-	-	-	-	-	-	-	-	67	1	-	-	4533			68
	92	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	10	1	-	-	-	-	-	-	-	10	1	-	-	733	25	24	11
	92	4	2	-	1	-	-	-	-	-	7	-	-	-	140	-	-	7
	94	22	-	-	-	-	-	-	-	-	18	-	4	-	440	24	23	22
	99	21	-	-	-	-	-	-	-	-	21	-	-	-	420	30	31	21
D	86	2	1	-	-	-	-	-	-	-	3	-	-	-	200			3
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	1	2	-	-	-	-	-	-	-	2	-	-	1	60			3
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	1260			63
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	1160			58

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	02%	00%	00%	-97%
'92	22%	00%	00%	+64%
'94	00%	00%	16%	+ 0%
'99	08%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	5466	Dec:	4%
	'92	180		0%
	'94	500		8%
	'99	500		12%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus nauseosus albicaulis																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	18	21	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	44	32	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'92	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'92	0		-
	'94	0		-
	'99	0		-

Chrysothamnus viscidiflorus viscidiflorus																		
Y	86	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	92	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	1	4	1	-	-	-	-	-	-	6	-	-	-	120	-	-	6
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	6	-	-	-	-	-	-	-	-	6	-	-	-	120	19	27	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'92	50%	13%	00%	-20%
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	200	Dec:	-
	'92	160		-
	'94	0		-
	'99	140		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Eriogonum microthecum																		
S	86	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	86	12	-	-	-	-	-	-	-	-	12	-	-	-	800			12
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	22	1	-	-	-	-	-	-	-	23	-	-	-	460	-	-	23
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	6	1	-	-	-	-	-	-	7	-	-	-	140	12	13	7
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	-40%
'92	08%	00%	00%	
'94	00%	00%	00%	
'99	75%	13%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'86	800	Dec:		0%
'92	480			4%
'94	0			0%
'99	160			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	86	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	92	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
Y	86	7	-	-	-	-	-	-	-	-	7	-	-	-	466			7
	92	17	-	-	-	-	-	-	-	-	17	-	-	-	340			17
	94	8	-	-	-	-	-	-	-	-	8	-	-	-	160			8
	99	36	-	-	-	-	-	-	-	-	36	-	-	-	720			36
M	86	25	-	-	-	-	-	-	-	-	25	-	-	-	1666	9	7	25
	92	137	-	-	-	-	-	-	-	-	137	-	-	-	2740	-	-	137
	94	93	-	-	-	-	-	-	-	-	93	-	-	-	1860	10	12	93
	99	65	-	-	-	-	-	-	-	-	65	-	-	-	1300	8	7	65
D	86	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	16	-	-	-	-	-	-	-	-	13	-	-	3	320			16
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	+20%
'92	00%	00%	00%	+81%
'94	13%	13%	.37%	-87%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	2465	Dec:	14%
	'92	3080		0%
	'94	2340		2%
	'99	2020		0%

Juniperus osteosperma																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	1	-	-	1	-	-	-	20			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	1	1	-	-	-	20	-	-	1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	1	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'92	00%	100%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'92	20		-
	'94	0		-
	'99	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia fragilis																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	86	23	-	-	-	-	-	-	-	-	4	19	-	-	1533			23
	92	3	-	-	2	-	-	-	-	-	5	-	-	-	100			5
	94	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	99	13	-	-	-	-	-	-	-	-	11	-	2	-	260			13
M	86	4	-	-	-	-	-	-	-	-	2	2	-	-	266	4	8	4
	92	3	-	-	2	-	-	-	-	-	5	-	-	-	100	-	-	5
	94	9	-	-	3	-	-	-	-	-	11	-	1	-	240	6	13	12
	99	16	-	-	-	-	-	-	-	-	14	-	-	2	320	5	18	16
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	1	-	-	-	-	-	-	1	-	20			1
	94	-	-	-	1	-	-	-	-	-	-	-	1	-	20			1
	99	5	-	-	-	-	-	-	-	-	-	-	1	4	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	-88%
'92	09%	00%	09%	+35%
'94	00%	00%	12%	+50%
'99	00%	00%	26%	

Total Plants/Acre (excluding Dead & Seedlings)				
'86	1799	Dec:		0%
'92	220			9%
'94	340			6%
'99	680			15%

Sclerocactus																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	23	-	-	-	-	-	-	-	-	23	-	-	-	460			23
	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	12	1	-	-	-	-	-	-	-	13	-	-	-	260	-	-	13
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'92	03%	00%	00%	-92%
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'86	0	Dec:	-
'92	720		-
'94	60		-
'99	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Yucca spp.																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	16	39	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'86	00%	00%	00%
'92	00%	00%	00%
'94	00%	00%	00%
'99	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'92	0		-
	'94	0		-
	'99	0		-